that the fifty-six well-established elements which he was able to consider, when arranged in the order of the magnitudes of their atomic weights, formed eight octaves, each eighth element exhibiting a recurrence of the same or closely similar chemical and physical properties. All this is now acknowledged, but the Chemical Society never did Newlands full justice in the matter; and while the Royal Society awarded the Davy Medal jointly to Profs. Mendeléef and Lothar Meyer for their work on the periodic scheme, it was only some years later, namely in 1887, that the same distinction was conferred, we believe in consequence of Dr. Frankland's representations, upon the discoverer of the law.

They order these things better in France. If Newlands had been a Frenchman, the Academy of Sciences and the Chemical Society, even if they had at first fallen into error, would have taken care that in the distribution of honours their own countryman should not come in last.

John Alexander Reina Newlands, to give him his full name, was the second son of the Rev. William Newlands, M.A. Glasgow, a minister of the Established Church of Scotland, and was born in Southwark in 1837. He was educated privately by his father, and, having early imbibed a taste for chemistry, he entered the Royal College of Chemistry as a student under Hofmann, in October 1856. After a year at College he became assistant to Prof. Way, then chemist to the Royal Agricultural Society. His mother, though born in England, belonged to an Italian family, and the insurrectionary movement under Garibaldi roused the enthusiasm and sympathy of the young chemist to such a pitch that, on the call for volunteers in 1860, he left Way, and went to fight in the cause of Italian freedom, and only returned home at the end of the campaign. He then rejoined Way for a time till, in 1864, he began practice on his own account as analytical chemist in the City. About this time, and for some years later, he taught chemistry at the Grammar School of St. Saviour's, Southwark, at the School of Medicine for Women, and at the City of London College. In 1868 he became chief chemist at Mr. James Duncan's extensive sugar refinery at the Victoria Docks, and remained in that position till 1886, when, in consequence of the decline of the business owing to foreign competition, he joined his brother, Mr. B. E. R. Newlands, in independent practice as analytical and consulting chemists. Mr. Newlands' name was associated with the invention of several important improvements in the refining of sugar, especially, we believe, the so-called alum process for the purification of beet molasses.

In 1884 Mr. Newlands published a small volume containing a reprint of all his papers on atomic weights, with some additions embodying his later views on the same subject. He is also author, jointly with his brother, of a treatise on "Sugar, a Handbook for Sugar Growers and Refiners," and of some articles on "Sugar" in Thorpe's Dictionary.

Mr. Newlands left a widow, a daughter, and a son, Mr. W. P. R. Newlands. The latter studied chemistry at the Royal College of Science, and will take his father's place in the firm.

A kindly courteous man, his face will be much missed by the older Fellows of the Chemical Society, where he had been a familiar figure for so many years.

W. A. T.

PROFESSOR GEORGE EBERS.

PROF. EBERS, the well-known Egyptologist, whose death has recently been announced, will be long remembered in connection with the papyrus which bears his name. Dr. Ebers was born in 1837 at Berlin, and his friendship with Brugsch and Lepsius led him to take a keen interest in Egyptology. In pursuit of his studies he visited Egypt, and it was during the winter of 1872-73, while staying at Thebes, that he had the good fortune to purchase from a native dealer at Luxor the hieratic medical papyrus which made him famous. On his return from Egypt he deposited the papyrus in the University Library at Leipzig, and two years later he published a facsimile of the text, with a description, glossary, &c., in collaboration with his friend Dr. Ludwig Stern. The "Papyrus Ebers," which is in a perfect state of preservation, is the most important medical papyrus that has been found in Egypt, and has thrown considerable light on the medical knowledge of the ancient Egyptians. In addition to his numerous publications on Egyptian archæology, Dr. Ebers gained a considerable reputation as a novelist. In 1889 ill health compelled Dr. Ebers to relinquish his duties as Professor of Egyptology at Leipzig, and from that time till his death he was a confirmed invalid.

NOTES.

The death is announced of M. N. A. Pomel, of Algiers, Correspondant of the Section of Mineralogy of the Paris Academy of Sciences.

The Paris Academy of Medicine has received information that a legacy of fifty thousand francs has been bequeathed to it by Mme. C. E. Bragayract.

Dr. Evert Julius Bonsdorff, formerly Professor of Anatomy and Physiology in the University of Helsingfors, has just died at the age of eighty-eight years.

M. Brouardel will be the president of the French Association for the Advancement of Science, at the meeting to be held next year at Boulogne. General Sébert has been elected vice-president of the Association, and will succeed to the presidency in 1900, when the meeting will take place in Paris.

A Reuter telegram from Naples announces that Mount Vesuvius is in a state of active eruption. The lava is flowing in four streams, its progress being at the rate of 100 yards an hour. The chestnuts on Mount Somma have been burned. Constant explosions are heard from the central crater, which is throwing out volcanic ash, and giving other evidence of activity.

A Congress of the Astronomische Gesellschaft will be opened at the Academy of Sciences at Budapest on September 24. Meetings will also be held on Monday and Tuesday, September 26 and 27. The Hungarian members of the Society have prepared a cordial reception for the astronomers who attend the Congress, among the hospitable features being a luncheon to be given by the Minister of Public Instruction (Dr. Julius von Wlassitz), a dinner by the town of Budapest, visits to places of interest in the town and neighbourhood, and excursions to the O'Gyalla Observatory and the Danube Cataracts—the Iron Doors. The Congress will certainly give a prominent place to the discussion of questions concerning the international zone-catalogue of the Astronomische Gesellschaft; and the resolutions of the Paris Conference, which have given rise to a large amount of criticism, will also be dealt with. Prof. F. Porro will present a preliminary report on the revision of the Piazzi Catalogue of Stars, undertaken by Dr. H. S. Davis and himself.

A Committee, having upon it many distinguished men of science in Australia has been formed to secure the establishment of some permanent memorial to commemorate the services rendered by the late Baron von Mueller. This movement is entirely distinct from that which the executors of the late Baron have initiated with the object of obtaining funds for the erection of a tombstone. The object of the Committee of the National Memorial Fund is to secure sufficient funds to allow of the establishment of some permanent memorial which shall worthily perpetuate Baron von Mueller's name; and whilst it is not possible as yet to state definitely the form which the memorial will take, it is hoped that sufficient funds will be forthcoming to provide for (1) the erection of some form of statue, and (2) the endowment of a medal, prize or scholarship, to be associated with Baron von Mueller's name, and to be awarded from time to time in recognition of distinguished work in the special branches in which he was most deeply interested, and which shall be open to workers throughout the Australasian Colonies. Subscriptions to the fund may be sent to the Hon. Treasurer, addressed to the College of Pharmacy, Swanston Street, Melbourne, or to the Hon. Secretaries (Mr. W. Wiesbaden and Prof. Baldwin Spencer), addressed to the University of Melbourne, and will be duly acknowledged.

Science states that Prof. Simon Newcomb will next year resume the active superintendence of the work in mathematics and astronomy in Johns Hopkins University. He expects to give a course of lectures on the Encyclopædia of the Mathematical Sciences, and will especially direct students pursuing advanced work in celestial mechanics.

THE Antarctic expedition, equipped and sent out by Sir George Newnes, sailed from London in the *Southern Cross* on Monday. Mr. Borchgrevink is in charge of the expedition, and with him are Lieut. Colbeck, Mr. Bernacchi, Mr. Hanson Nicolai, Dr. Sharp and Mr. H. B. Evans, all of whom will carry on scientific studies in the Antarctic regions. There are thirty-three men on board, all told. The ship, which has been built with the special object of Antarctic exploration, is barque-rigged, and is a modified form of the *Fram*. If all goes well, she may be expected to return in the year 1900.

THE Berlin correspondent of the *Times* states that the German Polar expedition which in the spring of this year started, under the direction of Herr Theodor Lerner, with the object of defining more closely the topography of the Polar regions and, if possible, of discovering some traces of the Andree expedition, has just returned to Hammerfest, where a short stay will be made in order to allow the ship *Helgoland* to be refitted and the crew to take a temporary rest. The following particulars of observations made during the voyage have been published:—King Charles Islands were reached towards the end of July, and a halt of a few days was made. Observations there made show that the group consists of three big islands—namely, Swedish Foreland, Jena Island, and a third lying between these two, which has been christened August Scherl Island in honour of the promoter of the expedition. There the explorers came upon the breeding grounds of the ivory gull, very few specimens of whose eggs have hitherto been discovered. Two small islands in the southern bay of Jena Island received the names of Tirpitz and Helgoland respectively. Captain Rüdiger took special observations of the exact position of King Charles Islands. An attempt to push on to Franz Josef Land failed owing to bad weather. The *Helgoland* then was able to coast round the island on the north-east and from the south, in spite of the difficulties caused by fog and ice, thereby proving that it is possible to go northwards notwithstanding the contrary Polar currents. The exact position of the island of Störö is given as being 10 further north than it is at present indicated in maps. The most northerly point reached was latitude 81° 32′, where the boundary of pack ice was determined. Much hitherto unknown ground was fished with drag nets, especially round the east point of King Charles Islands, and at the extreme end of Spitsbergen in water of over 1000 metres deep. A good deal of interesting material for future study was obtained. No signs of the Andrée expedition were discovered. The expedition will start on another voyage of exploration as soon as the ship has been refitted and the necessary stock of victuals been taken on board.

THE journey to Tomsk, in Siberia, promises to become quite a pleasant one under the new organisation of the direct trains. The train, which left St. Petersburg on July 31, offered even more comforts to the travellers than the best American trains. It consisted of one first class and two second class sleeping cars, one dining car, and one kitchen and electrical machinery car. It had also, in addition to the usual luxurious fittings of the best Pulman saloon cars, a piano in the first class saloon, a free library provided with a good selection of works on Siberia, as well as with all the papers which appear in the towns passed by the train during the journey; a pretty outlook-saloon at the back of the train, with meteorological instruments in it; and even a dark room for amateur photographers, arranged in the second class lavatory. All the furniture is covered with a special material which can be washed with a disinfecting fluid without being injured.

THE annual Congress of the Royal Institute of Public Health was opened on Thursday last in Dublin. There was a very large and representative gathering of delegates, including the Lord Mayor of Dublin and the Mayors of many towns in England and Ireland. The President, Sir C. Cameron, Medical Officer of Health for Dublin, delivered an inaugural address, in which he dealt chiefly with the improvements effected within the past thirty years in urban sanitation, the most important of which he described, pointing out the extent to which they had affected the death-rate in London, Dublin, and other urban centres of the United Kingdom. The members of the Congress were subsequently present at the formal opening, by the Lord Lieutenant, of the usual Health Exhibition in connection with the Congress. The sectional sittings began on Friday, and a large number of papers, covering a wide range of subjects concerning public health, were read and discussed. On Saturday afternoon a special meeting of the Fellows of the Royal College of Physicians of Ireland was held for the purpose of conferring the honorary Fellowships in connection with the Congress, and the occasion was also taken advantage of to confer honorary diplomas in State Medicine conjointly with the Royal College of Surgeons in Ireland. The following are the names of those on whom the honours were conferred:—Honorary Fellowships: Dr. Alexander Crum Brown, F.R.S.; Sir Charles Cameron; Dr. Mathew Hay; and Sir Richard Thorne Thorne, K.C.B., F.R.S. Honorary Diploma in State Medicine: Dr. T. W. Grimshaw, C.B.; Sir Henry Littlejohn; Dr. John W. Moore; Dr. W. R. Smith; Dr. T. J. Stafford; and Dr. J. C. Thresh.

THE spell of hot weather which set in over the southern portion of our islands about a fortnight ago has continued without interruption, and at the beginning of the present week the heat was even greater than previously. The London reporting station of the Meteorological Office gave 89° as the shade temperature on Monday, and in parts of the southern suburbs the thermometer touched 90°. There have already been at least ten days in the neighbourhood of London with a temperature of 80° and above, and on nine nights already the thermometer has not registered a lower reading than 60°. The warm nights are quite phenomenal, and the Greenwich orbservations for the previous twenty Augusts only show, in all, eleven such warm nights. The weather has for the most part been much cooler over the northern portion of our islands than in the south. Fog or mist has been very prevalent on ou coasts, and this has occasioned much delay and inconvenience to shipping. Thunderstorms have occurred in the western and central districts of England, and lightning has occurred over nearly the whole kingdom. Very little rain has fallen, except in a few isolated parts, where the thunderstorms have yielded a fair amount.

THE British Pharmaceutical Conference, which opened at Belfast on August 9, was a very successful meeting at which the science of pharmacy was well represented, and many papers of high merit were communicated. The presidential address, delivered by Dr. Charles Symes, was a comprehensive survey of affairs and advances in which pharmacists are interested. Synthetic compounds used in medicine and for various industrial purposes were described, the president pointing to the ever-growing lists of physiologically active synthetic organic compounds as evidence for the necessity for pharmacists to keep up with the developments of modern chemistry. Many of these compounds, which have been built up on theoretical considerations, have become valuable medicinal remedies. The fancy names given to them, however, rarely afford any definite idea of their composition, and without this pharmacists handle them in a very mechanical way, and lose much of interest that would otherwise attend the dealing with them. Dr. Symes expressed the hope that pharmacists would familiarise themselves as far as possible with the numerous class of substances which he had mentioned, for although they are of a complex nature, they are capable of much simplification by a consideration of the theoretical constitutions ascribed to them. Mr. Hodgkin read a paper on this subject at a meeting of the Conference held at Leeds in 1890. More recently Dr. Kohn, in an address delivered at a meeting of the Liverpool section of the Society of Chemical Industry, dealt with the relation which exists between the physiological action and the chemical structure of these bodies. The scientific chemist, remarked Dr. Symes, is now the architect and builder, using certain atoms and molecules to build up chemical structures to meet the wants of the medical profession in the treatment of disease. In Germany, where there are fewer restrictions on experimenting with animals than in this country, the chemist and physiologist work together—the one altering the molecules and molecular arrangement in the chemical, and the other testing and noting most carefully the effects obtained thereby; hence most of these remedies are produced in that country, and this manufacture has become an extensive chemical industry. Since the publication of Mr. Hodgkin's paper, referred to above, many new synthetic remedies have been introduced, and Dr. Symes gave a list of some of them, pointing out that of the fifty substances enumerated, a large percentage possess antiseptic, antipyritic, and analgesic properties; so that their rapid growth would seem to be due more to commercial enterprise than to meeting a real want in medical practice.

ANOTHER chemical industry, which has considerable interest for the pharmacist, was referred to by Dr. Symes at the Pharmaceutical Conference; it is the production of synthetic esters and odorous substances closely related to the odours of flowers, plants, and animal substances. With artificial musk and vanillin pharmacists have been long familiar, as also with the amyl, butyl, and ethyl compounds resembling fruit flavours, but of more recent date they have heliotropine (heliotrope), ionone and iraldine (violet), cumarine (new-mown hay), terpineol (lilac), bergamiol or linaloyl acetate (bergamotte), nerolin (neroly), jasmin oil, anisic aldehyde (hawthorn), geranol (rose geranium), carvol (caraway oil), safrol (oil of sassafras), &c. So much has this industry grown that not only are these products used for toilet soaps, but they also enter largely into the composition of the essences named after the flowers. They are more persistent than the natural odours, and it is said that the very popular essence of "Parma Violets" is, as a rule, quite innocent of the flowers, and is prepared from ionone mellowed down with small quantities of other extracts; and this the public really prefer. To those, however, who are accustomed to handle delicate perfumes, there is not so much difficulty in distinguishing between the artificial and the real, and it still taxes the skill of the chemist and the art of the perfumer to obtain that subtle delicacy of fragrance manufactured and elaborated in nature's own laboratory.

AN observation recorded by Mr. B. B. Osmaston in the *Journal* of the Asiatic Society of Bengal (vol. lxvi. Part 2, No. 4) indicates that, in some birds at least, the social instinct is present in a highly developed form. A young "Shikra," the Indian Sparrow-Hawk (*Astur badius*) trained to catch Mynahs and other birds, was sent after a party of "seven sisters" (the Jungle Babbler, *Crateropus canorus*) feeding on the ground. The Shikra captured one after a short chase, but the rest of the Babblers, however, hearing the cries of their captured "sister," came down to the rescue without the slightest show of hesitation, and in a short time were engaged in a spirited attack on the Hawk, apparently using both beak and claws in their effort to make her relinquish her hold, which she eventually did. Mr. Osmaston says that he has many times flown a Shikra at *C. canorus* always with the same result, viz. that so long as he kept out of the way the Babblers would attack the Hawk *en masse*.

THE article upon William Turner, the "Father of British Zoology," contributed by the Rev. H. A. Macpherson to the August number of the *Zoologist*, appears at an opportune time, for it draws attention to the important part which Cambridge, where the International Zoological Congress is now in progress, played in training the first naturalists bred upon English soil. Turner was born about 1507, took his degree at Cambridge in 1529–30, and was elected a Fellow of Pembroke Hall in the latter year. He spent the next ten years of his life as a Cambridge don, and during that time acquired an intimate knowledge of the habits of British wildfowl by personal observation. He did not, however, confine his field work to the neighbourhood. In 1542 he went abroad, and became acquainted with the habits of birds which he had never met in England. Turner travelled in Italy, and attended the botanical lectures of Lucas Ghinus at Bologna before he journeyed to Zürich, the home of Conrad Gesner, who alludes to him in terms of sincere admiration. On quitting Zürich, we learn from Mr. Macpherson's article, the English traveller journeyed to Basle, and thence to Cologne. During his residence in the latter city, in 1544, he printed the first ornithological work that the New Learning was destined to produce. Turner was still comparatively young, probably on the right side of forty, but his scholarly taste had already induced him to apply his critical skill to the difficult task of determining the particular species of birds described by Aristotle and Pliny. Accordingly, he entitled his little book, "Avium præcipuarum quarum apud Plinium et Aristotelem mentio est, brevis et succincta historia ex optimis quibusque scriptoribus contexta." Trifling as this may appear beside the ponderous tomes of Gesner and Aldrovandus, the fact remains that it forms a very important contribution to the science of the sixteenth century. Turner did not confine his attention to ornithology; he was also keenly interested in the fish fauna of these islands. His Catalogue of British Fishes, compiled when residing in Wissenburg in 1557, was a remarkable production for the middle of the sixteenth century. His Herbal was completed in 1568, and on July 7 of that year the great naturalist quietly passed away.

THE *Electrical Review* gives particulars of the experiments in telegraphy without intervening wires, which have been made during the past few weeks by the Wireless Telegraph Company, between the Royal yacht *Osborne* and Osborne House. Perfect signals are stated to have passed both ways during the whole ten days of the trials, no hitch occurring from first to last. Numerous messages passed between the Queen and the Prince of Wales, and between the Prince and a number of other members of the Royal family, and one or two Cabinet Ministers. Mr. Marconi had charge of the trials. Every morning a bulletin on the condition of the Prince was sent to the Queen by wireless telegraph. The height of the mast on shore was 105 feet, and that of the top of the wire from the deck of the *Osborne* was 83 feet. The yacht was moored in Cowes Bay, at a distance of nearly two miles from Osborne House, the two positions not being in sight of one another, as they were intercepted by a hill to the rear of East Cowes, which would have rendered signalling impossible between these two stations by means of any optical system. The messages varied in length, some having as many as 100 to 150 words. Towards the end of the period over which the experiments extended, the yacht went on a cruise towards Sandown, and the messages were received correctly close off the *Nab* lightship, which is moored off Bembridge. On the way there, when under steam, a lengthy message was received by the Prince from the Duke of Connaught, and the reply was successfully despatched, though well out of sight of Cowes and Osborne. Upon another occasion the yacht cruised as far as the Needles, or rather outside, and went on till the instruments picked up Alum Bay station—the Needles Hotel—continuing in communication with them all the way. Communication was kept up throughout the cruise with either the Osborne station or the Wireless Telegraph Company's station at Alum Bay. During the whole of the cruise the Osborne pole was obscured, and all the messages had to pass overland, and the Alum Bay pole was also obscured until coming right into the Bay, on account of the station being situated very much below Heatherwood. The messages were sent to Alum Bay from a distance of nearly seven and a half miles, although the ground lying between was exceedingly high; in fact, it was about the highest land met with during the time. It was so high, that the poles were screened by hundreds of feet of land.

HERR EDUARD ZACHE contributes a short article to the *Naturwissenschaftliche Wochenschrift*, on the identification of tectonic structures in the Mark region in Prussia. The problem is one of some difficulty in all parts of the North German Plain, on account of the uniformity of the diluvial covering. The results of the examination are exhibited in a sketch-map.

THE *Revue Générale des Sciences* (No. 13) contains a valuable paper by M. J. Machat, on the scientific basis of the Chinese Question. The physical and economic geography of China is sketched under the headings of soil, climatic conditions in relation to vegetation, animal life, and hydrography, agriculture, industries, internal commerce, demography, and foreign commerce A series of extremely interesting maps illustrates these sections.

WE have received a reprint of a paper read at the Toronto meeting of the British Association by Mr. J. B. Tyrrell, on the glaciation of North Central Canada. The conditions supposed to prevail during the existence of the great central continental ice-sheet—or, as it is now called, the Keewatin glacier—are described, and its life-history is traced as far as possible. The glacier appears to have been similar in character to the great glacier of north-western Europe, but with the difference that while the centre of the latter was over a high rocky country from which the ice naturally flowed outwards, the centre of the former was over what was probably then, as now, a low-lying plain.

IN order to make known the scientific value of the collections in the South African Museum and the original work done by the staff, as well as to promote the increase of the library by means of exchange with museums and scientific societies, the Trustees have commenced a serial publication entitled "The Annals of the South African Museum." The first part of this addition to scientific serials contains descriptions of new South African Scorpions in the collection of the South African Museum, by Dr. W. F. Purcell; description of some Mutillidæ in the Museum, by Mr. L. Péringuey; list of the reptiles and batrachians of South Africa, by Mr. W. L. Sclater; and a catalogue of the South African Hispinæ (Coleoptera), by Mr. Péringuey.

DR. FRIEDRICH KATZER contributes to *Globus* a paper on the volume of the Amazon at Obydos. Below Obydos the Amazon flows through so many channels that accurate measurements of its total discharge are impossible, and even there—900 kilometres from the mouth—a considerable fraction of its waters does not pass through the main channel. Dr. Katzer discusses former measurements, and gives new ones of his own; he finds as mean values—breadth, 1890 metres; rate of current, 1·2 metres per second; discharge, 120,000 cubic metres per second. Analyses of two samples of water, taken at depths of 0·5 metres and 25 metres, gave 0·056 and 0·039 grammes per litre as total dissolved matter; suspended matter, three to four times as much; thus placing the Amazon amongst the purest river-waters of the globe.

IT is reported in the *Times* that MM. Dex and Dibos, two French aeronauts, who recently submitted their scheme for the exploration of Africa by means of a balloon to the French Academy and the Smithsonian Institution, which bodies are stated to have approved of the plans, have now, in conjunction with M. Hourst, the African traveller, invoked the aid of the Paris Municipality in support of the great undertaking. They do not profess to be able—and in this they are in accord with workers in the same direction—to construct a completely dirigible balloon; but they believe in the practicability of their scheme, assuming the air currents of tropical Africa are fairly regular, at least at certain seasons. The balloon they intend to construct is to be 92 feet in diameter, with a capacity of 406,134 cubic feet. It is to be made of silk, and covered with an eight-fold coat of varnish, so that only a very small quantity of gas will be lost per day. The car will be in two storeys, connected by a rope ladder, the upper storey providing living and sleeping accommodation for six travellers, the lower being reserved for the apparatus used in manœuvring the balloon. Another smaller car, anchored to the balloon, is to serve as a means of communication with *terra firma*, and to be lowered when the balloon has been anchored. The sum of 15,000 francs, for which the Paris Municipality has been asked, is intended for preliminary trials, as the cost of the actual journey through Africa, it is hoped, will be defrayed by rich members of the Committee for French Africa. M. Dex describes the scheme in the current number of the *Revue Scientifique*.

THE U.S. Pilot Chart of the North Atlantic Ocean for August contains a type of the summer chart of that ocean, representing the conditions of wind, cloud and barometric pressure, compiled from Greenwich noon reports returned to the Hydrographic Office at Washington. The chart shows very clearly the right-handed or clock-wise circulation of the winds around the region of high barometric pressure, the central area of which, at this season of the year, is in the region of the Azores. Another special chart shows the drifts of floating bottle-papers returned to the Hydrographic Office during the year ending July 1 last, and referring to the Atlantic Ocean. Some of the present papers offer interesting particulars; one, which was cast adrift off Nantucket Shoal, and recovered near Campbelton after the lapse of 512 days, giving an average daily velocity of 5·1 miles. Three other bottles, which were thrown overboard in mid-ocean at the same time, were all recovered within a short distance of each other in the same week after a drift eastward of 1200 miles, the mean rate of travel being 9·9 miles a day.

Two sphygmograph curves, obtained by Mr. R. De C. Ward at altitudes of 15,700 feet and 19,200 feet, are reproduced in a short paper in the *Journal* of the Boston Society of Medical Sciences (June). The curves derive interest from the fact that they are the first from so great altitudes to be reproduced, and also because the peculiarities of heart action shown in them are the result of altitude pure and simple, as absolutely no physical was taken in making the ascents.

IN the current number of the *Zeitschrift für physikalische Chemie*, Mr. S. L. Bigelow describes some interesting results of experiments made in Prof. Ostwald's laboratory on the catalytic action of organic substances on the oxidation of sodium sulphite. It has been known for a considerable time that the rate of oxidation of sulphurous acid is increased by the presence of many inorganic salts. In beginning a closer investigation of this subject, Mr. Bigelow was accidentally led to the discovery that the oxidation of a sodium sulphate solution by a current of air is hindered to a remarkable extent by the presence of a small quantity of alcohol. One part of alcohol in ten thousand of a one-hundredth normal solution of sodium sulphite had a perceptible influence. In another case it was found that the admixture of mannitol with sodium sulphite in the proportion of one molecule to eight hundred, diminished the rate of oxidation 50 per cent. Great difficulty was experienced in obtaining constant results, and it was found that the small quantities of impurity in the water used as solvent, and in the aspirated air, produced large variations: it was, in fact, not found possible to obtain perfectly constant conditions. An extension of the inquiry to other organic substances led to the discovery of some regularities, but not to the establishment of any general theory of the action. The phenomenon obviously bears some relation to the well-known inhibitory action of organic substances on the oxidation of phosphorus.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*, ♂) from India, presented by Miss E. Sandell; a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Madam Giorgi; a Rhesus Monkey (*Macacus rhesus*) from India, presented by Miss Leathers; a Sykes' Monkey (*Cercopithecus albigularis*, ♀) from East Africa, presented by Mr. C. Carter; a Grand Eclectes (*Eclectus roratus*) from Molluccas, presented by Mrs. Peter Watson; a Corai's Snake (*Caluber corais*) from British Guiana, presented by Mr. C. W. Lilley; a Chimpanzee (*Anthropopithecus troglodytes*, ♀) from West Africa, a Tiger (*Felis tigris*) from Eastern Asia, a Leopard (*Felis pardus*) from Africa, a Red-bellied Wallaby (*Macropus billardieri*) from Tasmania, two Elephantine Tortoises (*Testudo elephantina*) from Aldabra and Mahe Islands, a Reticulated Python (*Python reticulatus*) from the East Indies, deposited; two Maximilian's Aracaris (*Pteroglossus uredi*), three Lettered Aracaris (*Pteroglossus inscriptus*), six Superb Tanagers (*Calliste fastuosa*), four Brazilian Hangnests (*Icterus jamaicai*), three Merrem's Snakes (*Rhachnœa mirrimi*) from Brazil, two Red Under-winged Doves (*Leptoptila rufaxilla*), a Little Guan (*Ortalis motmot*) from Guiana, three Golden-headed Conures (*Conurus aureus*) from South-east Brazil, two Red-ground Doves (*Geotrygon montana*) from South America, purchased; a Burrhel Wild Sheep (*Ovis burrhel*), born in the Gardens; six Californian Quails (*Callipepla californica*), a Crested Pigeon (*Ocyphaps lophotes*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

COMET PERRINE (MARCH 19).—Dr. Berberich communicates to *Ast. Nach.* (3510) the following elliptical elements for Comet I. 1898 (Perrine, March 19):—

$$T = 1898 \text{ March } 17{\cdot}11244 \text{ Berlin M.T.}$$

$$\left.\begin{array}{rl} \omega = & 47^\circ\ 15'\ 4''{\cdot}0 \\ \Omega = & 262\ \ 24\ \ 37{\cdot}1 \\ i = & 72\ \ 32\ \ 45\ 2 \end{array}\right\} 1898{\cdot}0$$

$$\begin{array}{rl} \log q = & 0\ 040842 \\ \log e = & 9{\cdot}9897755 \\ \text{Period} = & 322{\cdot}56 \text{ years.} \end{array}$$

An ephemeris for Berlin midnight, computed from these elements, is also given; but seeing that the brightness is now only about one-twentieth that at the time of discovery, we give only the following abstract:—

1898.	R.A. h. m. s.	Decl. ° ′	Br.
August 26	6 25 22	+51 13·4	0·055
Sept. 1	29 22	51 0·9	0·053
,, 7	32 14	50 50·9	0·050
,, 13	33 56	50 43·1	0·048
,, 19	34 27	50 37·4	0·047
,, 25	33 39	50 33·5	0·046
Oct. 1	6 31 33	+ 50 30·4	0·044

During the above period the comet passes from the north-eastern part of Auriga into the constellation of the Lynx.

PARALLAXES AND MASSES OF γ VIRGINIS AND γ LEONIS —The mass and dimensions of a binary system can be readily calculated if the parallax as well as the apparent size of the orbit be known, but there is another possible method of arriving at the same facts without a previous knowledge of the parallax. This consists in a measurement of the relative velocities of the two components, from which, the period being known, the circumference or semi-axis major of the orbit at once follows, so that, in addition, the parallax itself can be determined in the case of telescopic binary stars. In spectroscopic binaries, where the velocities are usually very great, the spectroscopic measurement of the relative orbital velocity is easy, but it becomes a much more difficult matter in the case of slowly moving telescopic binaries. Dr. Belopolsky, however, has had the courage to attack the problem, and has applied the spectroscopic method to γ Virginis and γ Leonis (*Ast. Nach.*, 3510). The 30-inch refractor at Pulkowa, he tells us, permits the investigation of the spectra of stars down to magnitude 4·5, and enables him to separately photograph the spectra of the components of double stars which are not less than 3″ apart.

In the case of γ Virginis the mean values of the velocities of the components in the line of sight, with respect to the sun, were found to be − 2·926 g.m. (13·49 Eng. miles) per sec. and − 2·648 g m. (12·21 Eng. miles) per sec. respectively for the northern and southern components. It follows, then, that the velocity of the northern component with respect to the southern one is − 0·278 g.m. (1·28 Eng. miles) per sec., from which the relative orbital velocity can be deduced. Following the methods of Lehman-Filhes, and adopting Doberck's elements of the orbit, which give a semi-axis major of 4″ and a period of 180 years, Dr. Belopolsky arrives at the following results for the system of γ Virginis:—

Semi-axis major ... = 79·4 astronomical units.
Combined mass ... = 15 sun's mass.
Parallax .. ... = 0″·051
Velocity of system in line of sight ... = − 2·79 g.m. (12·86 Eng. miles) per sec.

In the case of γ Leonis, where the components are 3″·2 apart, and have magnitudes of 2·0 and 3·5 respectively, the mean velocity in the line of sight of the brighter component, including the Potsdam measurements, is − 5·32 g.m. (24·53 Eng. miles) per sec. with respect to the sun, while that of the companion, as measured at Pulkowa, is − 5·03 g.m. (23·19 Eng. miles) per sec. The relative velocity is therefore + 0·29 g.m. (1·34 Eng. miles) per sec., if the brighter component be regarded as the central body. Adopting Doberck's elements, giving the semi-axis major as 2″·0 and the period as 402·6 years, Dr. Belopolsky finds the following results:—